

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
21 April 2005 (21.04.2005)

PCT

(10) International Publication Number  
**WO 2005/035752 A2**

(51) International Patent Classification<sup>7</sup>: **C12N 15/00**

(21) International Application Number:  
PCT/US2004/032599

(22) International Filing Date: 1 October 2004 (01.10.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/508,568 3 October 2003 (03.10.2003) US  
60/558,504 31 March 2004 (31.03.2004) US

(71) Applicant (for all designated States except US): **UNIVERSITY OF FLORIDA RESEARCH FOUNDATION, INC.** [US/US]; 223 Grinter Hall, Gainesville, FL 32611 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KLEE, Harry, J.** [US/US]; 4614 N.W. 53rd St., Gainesville, FL 32606 (US). **TIEMAN, Denise** [US/US]; 2330 S.W. Williston #1134, Gainesville, FL 32608 (US).

(74) Agents: **PACE, Doran, R. et al.**; Saliwanchik, Lloyd & Saliwanchik, P.O. Box 142950, Gainesville, FL 32614-2950 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- without international search report and to be republished upon receipt of that report
- with sequence listing part of description published separately in electronic form and available upon request from the International Bureau

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MATERIALS AND METHODS FOR SYNTHESIS OF A FLAVOR AND AROMA VOLATILE IN PLANTS

(57) Abstract: The subject invention concerns polynucleotides encoding a plant 2-phenylethanol dehydrogenase enzyme. In one embodiment, the polynucleotide encodes a tomato 2-phenylethanol dehydrogenase. The subject invention also concerns polynucleotides encoding a plant phenylalanine decarboxylase enzyme. In one embodiment, the polynucleotide encodes a tomato phenylalanine decarboxylase. The subject invention also concerns 2-phenylethanol dehydrogenase polypeptides and phenylalanine decarboxylase polypeptides encoded by polynucleotides of the present invention. The subject invention also concerns methods for providing a plant with an increased flavor and aroma volatile. Plants can be transformed with one or more polynucleotide of the present invention. The subject invention also concerns these transformed plant cells, plant tissue, and plants and transgenic progeny thereof.



**WO 2005/035752 A2**